

# Mark 518 Series

## Low Pressure Back Pressure Regulators

The Mark 518 is a back pressure regulator for use in low pressure air and gas services. With a selection of six pressure ranges, set points can be chosen to control back pressures from 1" w.c. to 7 psi. As a standard feature, the Mark 518 is provided with soft seats for ANSI Class VI bubble-tight shutoff. The valve is also leak-proof under vacuum conditions.

### OPERATION

The spring in the Mark 518 holds the seat in the normally closed position. As the inlet pressure increases to the set point (as determined by the value set via the adjusting screw), the diaphragm is pushed upward to overcome the force of the spring. When the pressure rises above the set point, the valve will begin opening to relieve the pressure. The pressure set point can be changed by turning the adjusting screw clockwise or counter-clockwise to achieve the desired setting.

### APPLICATION

The Mark 518 back pressure relief valve is used for maintaining the pressure of air and gases in the positive inches w.c. pressure range. The regulator is specifically designed for pressure inertizing and blanketing in mixing vessels, storage tanks and containers using an inert gas such as nitrogen.

For regulating back pressure under vacuum or for use as a vacuum breaker, special configurations of the Mark 518 are available. Additionally, an air assisted version is available for higher setpoints to aid tank pressurization during emptying with a relief function.



### FEATURES

- Completely self-operated – spring-loaded regulator operates off of process pressure and requires no external power source or air supply for operation.
- Wide range of settings for controlled back pressure from 3" wc to 201" wc (7.5 to 520 millibars), depending on valve size.
- Long service life – all wetted metal parts produced from Stainless Steel or Hastelloy C for durability and long life.
- Tighter shutoff – soft seats for ANSI Class VI bubble-tight shutoff.

## SPECIFICATIONS

**Sizes:** 1", 2", 4" (DN25, DN50, DN100)

**End Connections:**

- ANSI (150)
- DIN (PN16)
- NPT (1"/DN25 size only)

**Materials:**

- Body: 316 Stainless Steel
- Trim: 316 Stainless Steel or Hastelloy C
- Spring Housing: Steel
- Diaphragm: PTFE or Viton
- Valve Seat: J-6000 Black (with PTFE diaphragm) or Viton (with Viton diaphragm)

**Service:** low pressure air or gas

**Shutoff:** ANSI Class VI

**Ranges:**

- 1" range
  - 3 to 5 inches w.c. (8 to 13 mbar)
  - 4 to 10 inches w.c. (10 to 25 mbar)
  - 5 to 22 inches w.c. (13 to 55 mbar)
  - 6 to 40 inches w.c. (15 to 100 mbar)
  - 8 to 80 inches w.c. (20 to 200 mbar)
  - 10 to 201 inches w.c. (25 to 500 mbar)
- 2" range
  - 4 to 10 inches w.c. (10 to 25 mbar)
  - 5 to 22 inches w.c. (13 to 55 mbar)
  - 6 to 40 inches w.c. (15 to 100 mbar)
  - 8 to 80 inches w.c. (20 to 200 mbar)
  - 10 to 201 inches w.c. (25 to 500 mbar)
- 4" range
  - 6 to 50 inches w.c. (15 to 125 mbar)
  - 8 to 74 inches w.c. (20 to 185 mbar)

**Temperature:** -14°F to 356°F (-10°C to 180°C); PTFE / Viton

**Weight:**

- 1": 16 pounds (7 kgs)
- 2": 28 pounds (13 kgs)
- 4": 82 pounds (37 kgs)

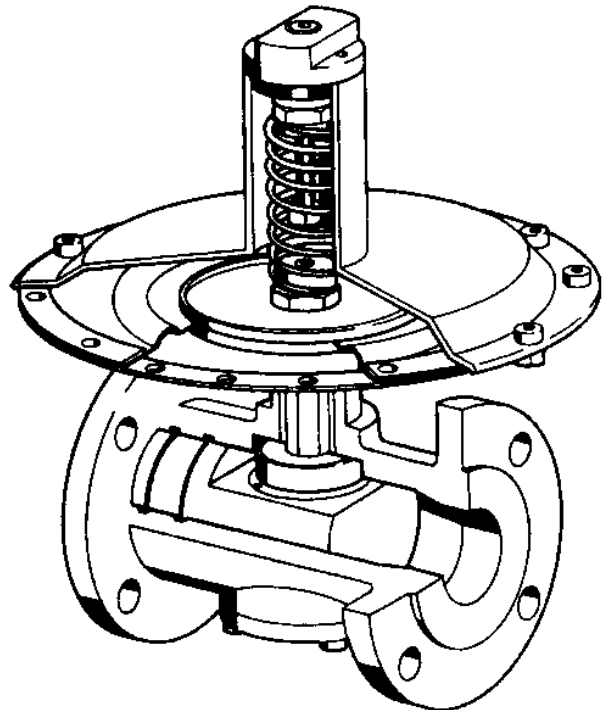
**Cv:**

- 1": 7.5; seat is 0.71" (18mm)
- 2": 17; seat is 1.0" (26mm)
- 4": 81; seat is 2.2" (55mm)

**Maximum Inlet Pressure:** 29 psi (2,0 bar)

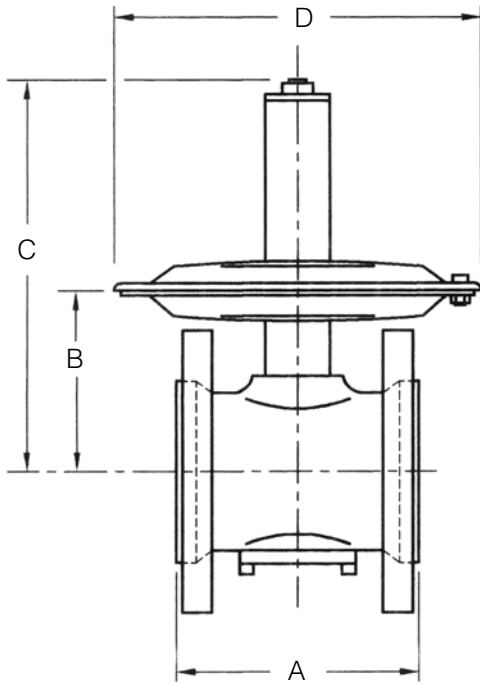
**Installation:**

- 1" & 4" (DN25 & DN100): regulator may be fitted with a diaphragm casing in either a horizontal or vertical position. The horizontal position is preferable.
- 2" (DN50): Standard mounting is in the horizontal position with the diaphragm housing facing upwards; if mounted with the diaphragm housing in a vertical position, a discharge pipe must be provided on the diaphragm (must be specified when ordering).



## MARK 518 LOW PRESSURE BACK PRESSURE REGULATORS

### DIMENSIONS



| Size | Flange | Dimensions (inches) |     |      |                |      | Weight (lbs) |
|------|--------|---------------------|-----|------|----------------|------|--------------|
|      |        | A                   | B   | C    | D <sub>1</sub> | D    |              |
| 1"   | 150    | 6.3                 | 3.4 | 8.4  | 8.5            | —    | 16           |
| 2"   | 150    | 5.9                 | 4.1 | 9.1  | 8.5            | 14.9 | 28           |
| 4"   | 150    | 9.8                 | 5.8 | 10.8 | 14.9           | 23.6 | 82           |

| Size  | Flange | Dimensions (mm) |      |     |                |     | Weight (kgs) |
|-------|--------|-----------------|------|-----|----------------|-----|--------------|
|       |        | A               | B    | C   | D <sub>1</sub> | D   |              |
| DN25  | PN16   | 160             | 86,4 | 213 | 215            | —   | 7            |
| DN50  | PN16   | 150             | 104  | 231 | 216            | 279 | 13           |
| DN100 | PN16   | 249             | 147  | 274 | 379            | 599 | 37           |

### FLOW CHARTS

- 1", Cv = 7.5 (6,5 Kv)

| P1 Inches W.C. (mbar) | 1 (2)        | 2 (5)        | 4 (10)       | 6 (16)       | 10 (25)      | 16 (40)      | 20 (50)      | 32 (80)      | 40 (100)     | 64 (160)     | 100 (250)    | 160 (400)    |
|-----------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| P2 Inches W.C.        | SCFH (Nm3/h) | SCFH (Nm3/h) | SCFH (Nm3/h) | SCFH (Nm3/h) | SCFH (Nm3/h) | SCFH (Nm3/h) | SCFH (Nm3/h) | SCFH (Nm3/h) | SCFH (Nm3/h) | SCFH (Nm3/h) | SCFH (Nm3/h) | SCFH (Nm3/h) |
| Atmosphere            | 283 (8)      | 424 (12)     | 636 (18)     | 777 (22)     | 989 (28)     | 1236 (35)    | 1377 (39)    | 1766 (50)    | 1942 (55)    | 2472 (70)    | 3108 (88)    | 3885 (110)   |
| -0.8 (-2)             | 388 (11)     | 530 (15)     | 671 (19)     | 812 (23)     | 1024 (29)    | 1271 (36)    | 1413 (40)    | 1766 (50)    | 1942 (55)    | 2472 (70)    | 3107 (88)    | 3885 (110)   |
| -2 (-5)               | 530 (15)     | 600 (17)     | 742 (21)     | 883 (25)     | 1059 (30)    | 1307 (37)    | 1488 (41)    | 1801 (51)    | 1978 (56)    | 2507 (71)    | 3108 (88)    | 3885 (110)   |
| -4 (-10)              | 671 (19)     | 742 (21)     | 883 (25)     | 989 (28)     | 1130 (32)    | 1377 (39)    | 1519 (43)    | 1836 (52)    | 989 (28)     | 2543 (72)    | 3143 (89)    | 3920 (111)   |

- 2", Cv = 17 (15 Kv)

| P1 Inches W.C. (mbar) | 1.6 (4)  | 4 (10)    | 6 (15)    | 10 (25)   | 16 (40)   | 20 (50)   | 32 (80)    | 40 (100)   | 80 (200)   | 160 (400)  | 200 (500)   |
|-----------------------|----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|-------------|
| SCFH (Nm3/h)          | 883 (25) | 1413 (40) | 1766 (50) | 2295 (65) | 2825 (80) | 3178 (90) | 4061 (115) | 4591 (130) | 6003 (170) | 8829 (250) | 10594 (300) |

Consult factory for 4" information.

ORDERING SCHEMATIC

| Model | Size | Material | / | 1 | 2 | 3 | 4 | 5 |
|-------|------|----------|---|---|---|---|---|---|
|       |      |          |   |   |   |   |   |   |

| Model |          |
|-------|----------|
| 518   | Standard |

| Size |            |
|------|------------|
| 025  | 1" (DN25)  |
| 050  | 2" (DN50)  |
| 100  | 4" (DN100) |

| Material |                 |
|----------|-----------------|
| S        | Stainless Steel |
| H        | Hastelloy C     |

| 1 | Connections             |
|---|-------------------------|
| F | Flange                  |
| G | Threaded (1"/DN25 only) |

| 2 | Connections #2          |
|---|-------------------------|
| D | DIN (BSPP for threaded) |
| A | ANSI                    |
| X | FNPT for threaded       |
| Z | Non-Standard            |

| 3 | Diaphragm |
|---|-----------|
| P | PTFE      |
| V | Viton     |

| 4         | Pressure Range                         |
|-----------|--|
|           | 1" (W.C.)                              |
| 10        | 3 to 5 inches w.c. (8 to 13 mbar)      |
| 20        | 4 to 10 inches w.c. (10 to 25 bar)     |
| 50        | 5 to 22 inches w.c. (13 to 55 mbar)    |
| 100       | 6 to 40 inches w.c. (15 to 100 mbar)   |
| 200       | 8 to 80 inches w.c. (20 to 200 mbar)   |
| 500       | 10 to 201 inches w.c. (25 to 500 mbar) |
| 2" (W.C.) |  |
| 20        | 4 to 10 inches w.c. (10 to 25 mbar)    |
| 50        | 5 to 22 inches w.c. (13 to 55 mbar)    |
| 100       | 6 to 40 inches w.c. (15 to 100 mbar)   |
| 200       | 8 to 80 inches w.c. (20 to 200 mbar)   |
| 500       | 10 to 201 inches w.c. (25 to 500 mbar) |
| 4" (W.C.) |  |
| 100       | 6 to 50 inches w.c. (15 to 125 mbar)   |
| 200       | 8 to 74 inches w.c. (20 to 185 mbar)   |

| 5  | Seat Size                          |
|----|------------------------------------|
| 18 | 7.5 Cv (6,5 Kv); 0.71" (18mm) - 1" |
| 26 | 17 Cv (15 Kv); 1" (26mm) - 2"      |
| 55 | 81 Cv (70 Kv); 2.2" (55mm) - 4"    |

Please refer to our Mark 508 Series literature for your lower capacity requirements.

For back pressure vacuum regulators, vacuum limiter function or air assist option, please contact factory.



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